

Grade: AISI 316 (UNS S31600, ASTM A182, ASTM A276, ASTM A479, BS EN 10088)

NACE MR-0175/ISO 15156

Type: Austenitic stainless steel delivered in the solution annealed condition

Also stocked in H grade and Ti grade designations.

Nominal Composition	
Element	Weight %
Carbon	0.08*
Silicon	1.0 max
Manganese	2.0 max
Phosphorus	0.045 max
Sulphur	0.03 max**
Molybdenum	2.0 – 3.0
Chromium	16.0 – 18.0
Nickel	10.0 – 14.0
Nitrogen	0.1 max

Mechanical Properties Condition

Solution annealed at around 1050oC and water quenched

Property	Values
Ultimate Tensile Strength *	75 min KSI (515 N/mm ²)
0.2 % Yield Strength *	30 min KSI (205 N/mm ²)
Elongation	30 % min
Reduction of Area	50 % min
Charpy Impact Toughness	135 J at –75° C
Hardness	237 HBW max (22 HRC)

Notes

*L grade limits %C content to 0.03% max

**For increased machinability a controlled sulphur content is recommended.

316 - This grade is the higher carbon version and should not be welded.

Weldable grades have a lower carbon (and are designated 316 L).

These are sometimes called 18-8 stainless steels. Due to the low C-content, the resistance to intergranular corrosion is greatly improved in the welded condition.



Notes

The impact toughness shown is typically achieved. The grade may be strengthened by cold working, but this reduces the corrosion resistance. Cold worked grades are not acceptable to N.ACE MR0175/ ISO 15156.

The grade has low strength and good corrosion resistance. The molybdenum content gives it particularly good seawater corrosion resistance. Hence it is used for small fittings, gaskets and small bore tubing.

The grade is prone to chloride stress corrosion cracking, and therefore NACE MR0175/ ISO 15156 states it should not be used at or above 60 degrees C.